

REMARKS

This is in response to the Official Action currently outstanding with respect to the above-identified application, which Official Action the Examiner has designated as being FINAL.

Claims 10 and 12 are pending in the above-identified application. Claims 1-9, 11, and 13-20 previously were withdrawn from further consideration in the above-identified application as being directed to non-elected subject matter. No additional claims are added, cancelled or withdrawn. Accordingly, upon the entry of the foregoing Amendment, Claims 10 and 12 as hereinabove amended will constitute the claims currently under active prosecution in the above-identified application.

The claims of the above-identified application as they currently stand are reproduced above for the convenience of the Examiner in the spirit of the Rules.

More particularly, in the currently outstanding non-final Official Action the Examiner has:

- 1) Re-acknowledged Applicants' claim for foreign priority under 35 USC §119 (a)-(d) or (f), and reconfirmed the receipt by the United States Patent and Trademark Office of the required copies of the priority documents.
- 2) Accepted the formal drawings filed in the above-identified application on 8 February 2006.
- 3) Inquired as to whether all of the inventions of all of the pending claims were commonly owned at the time that they were made. – **In response, Applicants respectfully confirm that the subject matter of all of the claims of this application was commonly owned at the time that it was made**
- 4) Indicated that Applicants' previous argument concerning Claims 10 and 12 is deemed to be moot in view of his new grounds for rejection.

- 5) Rejected Claims 10 and 12 under 35 USC 103(a) as being unpatentable over Hotomi (US Patent No. 5,477,249) in view of Hertz (US Patent No. 4,196,437) and/or Grimes et al (US Published Patent Application No. 2002/0005876) and Nou (US Published Patent Application No. 2003/0025744) and/or Mantelli (US Patent No. 6,264,298) and/or Yamada (US Published Patent Application No. 2003/0085940).

Further comment concerning items 1-4 above is not deemed to be required in these Remarks.

On the other hand, with respect to item 5 above, Applicants note that the Examiner insists that the Hotomi reference teaches all of the elements of Claim 10 except (i) the nozzle has a diameter in the range from 0.01 μm and 15 μm , and (ii) controlling a speed of the relative movement so that adjacent ones of discharge pattern are partly overlaid with each other. With respect to Claim 12 (that depends from Claim 10), the Examiner insists that the Oguchi reference (meaning the Hotomi reference?) as modified by Nou and/or Mantell and/or Yamada teaches wherein the line-drawing means controls the voltage or the speed of relative movement so that the adjacent ones of the discharge pattern are overlaid with each other by 0.5 to 1.5 times the vertical diameter of each pattern, the vertical diameter being a diameter orthogonal to a direction of relative movement.

In the above regards, and as previously mentioned, Applicants respectfully again note that the nozzle diameter disclosed by the *Hotomi* reference is “20 to 200 μm ”. The nozzle of the present invention, on the other hand, is “0.01 to 15 μm ”. Accordingly, Applicants respectfully submit that as herein amended the claims of the above-identified application are clearly and totally distinct from the *Hotomi* reference.

Furthermore, Applicants respectfully call the Examiner's attention to the fact that with the present invention, the miniaturization of the diameter of a discharge hole to 0.01 μm to 15 μm causes a local electric field to be generated thereby allowing a reduction in drive voltage during discharge. In the case where the discharge condition is satisfied on account of the local field intensity, it is preferable that the upper limit value of the nozzle diameter be 15 μm . This is to say that the present invention makes it possible to discharge fluid through a nozzle of a discharge head by an electrostatic suction type head configuration, without the use of a piezo type and/or a thermal type head configuration that have conventionally been commercially used in ink jet printers. Still further, in this case, the "line-drawing means utilizes an intermittent discharge phenomenon where the frequency varies depending on the voltage and the electrical conductivity of the fluid."

The Hotomi reference, on the other hand, discloses an ink discharge apparatus that discharges ink through a nozzle by using ***both*** electrostatic suction force and oscillations of a piezoelectric element. In other words, Applicants respectfully submit that the Hotomi reference does not recognize at all that the miniaturization of the diameter of a discharge hole of a nozzle to 0.01 μm to 15 μm makes it possible to discharge a fluid through a nozzle of a discharge head by electrostatic suction ***without the use of oscillations provided by a piezoelectric element.***

In addition, with respect to the Hertz reference, Applicants respectfully submit that it should be recognized that that reference discloses that a liquid is discharged by pressure using piezoelectric crystals 43 and 53. Similarly, in the Grimes reference it is disclosed that a liquid is discharged by pressure using a pump or a high-pressure source.


Accordingly, Applicants respectfully submit that, even though the ranges of the diameters of a discharge hole in a nozzle as disclosed in the Hertz and Grimes references overlap partially with the range of diameters of a discharge hole of a nozzle as disclosed by the present invention, it remains clear that the invention as set forth in Claim 10 of the present application would not have been obvious to a person of ordinary skill in the art at the time that the present invention was made in view of a combination of the disclosures of the Hotomi, Hertz and Grimes references.

Consequently, since Claim 12 depends from Claim 10, it is believed that the currently pending claims of the above-identified application are in condition for immediate allowance, and upon reconsideration of this application in view of the foregoing such action is respectfully and earnestly solicited.

Applicants also believe that additional fees beyond those submitted herewith are not required in connection with the consideration of this Amendment. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. **04-1105**, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Respectfully submitted,

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